AMENDMENTS TO THE SPECIFICATION:

Please replace paragraph "ABSTRACT" with the following amended paragraph:

The Field Programmable Instrument Controller (FPIC) is a stand-alone low to high performance, clocked or unclocked hybrid multi-processor with parallel analog and digital processing that operates as a microcontroller with versatile interface and operating options. The FPIC can also be used as a concurrent processor for a microcontroller or other processor. A tightly coupled Multiple Chip Module (MCM) design incorporates non-volatile memories, a large Field Programmable Gate Array (FPGA), field programmable high precision analog to digital converters, field programmable digital to analog signal generators, and multiple ports of external mass data storage and control processors. The FPIC has an inherently open architecture with in-situ reprogrammability and state preservation capability for discontinuous operations. It is designed to operate in multiple roles, including but not limited to, a high speed parallel digital signal processing; co-processor for precision control feedback during analog or hybrid computing; high speed monitoring for condition based maintenance; and distributed real time process control. The FPIC is characterized by low power with small size and weight.

Please replace paragraph [0005] in its entirety with the following amended paragraph:

[0005] The present invention relates to the field of process and machine diagnostics, prognostics and control, and more specifically to a remotely programmable electronic component constructed of various commodity microcircuits that provide means for a field programmable distributed control system employing unclocked asynchronous multi-threaded process control that exploits the tight coupling of components from non-similar processes and non-volatile storage for numerous monitoring/controlling applications under conventional and exacting conditions requiring high speed operations. Further, the electronic components that embody the present invention can be packaged in the form of a small Multi-Chip Module (MCM). "Small" in this case refers to an MCM that can be constructed in a form factor comparable or smaller than a popular integrated circuit processor chip used in personal computers.

Please replace paragraph [0013] in its entirety with the following amended paragraph:

[0013] Quist, et al U.S. Pat. No. 6,199,018 discloses a network of multiple computers that perform machine diagnostics using local monitoring devices. These include sensor sets and sensor circuit boards. The patent discloses using a failure detection circuit and an insulation failure sensor along with various other circuitry interfaced to individual sensors. The programming of the microprocessors and computers that comprise the diagnostic network are all of the static nature that must be reprogrammed to change functionality. This is a significant disadvantage considering the cost of programming persons and the delays required to implement such programming. The present invention provides field programmability and automatic instantiation of many of the circuits used in Quist's patent. The field programmability of the present invention enables the FPIC to reconfigure and adapt [with] [~~to~~] new electronics and to new algorithms to achieve dynamic control based on diagnostics and prognostics. This is a significant improvement in time and cost.

Please replace paragraph [0028] in its entirety with the following amended paragraph:

[0028] Another object is to improve on prior art by adding additional functionality for instantiation that is made possible with dynamic reconfigurability of devices like the FPGA. Instantiation lies at the heart of inventions. Static instantiation is unchanging. Instantiation that changes "on-the-fly" is enabled at least by semiconductor technology. For example, the current inventor Blemel with Asam (3,566,394, (1971)) used semi-conductor Transistor / Transistor Logic (TTL) to create analog trigonometric transforms. There are numerous other patents that are based on static interconnection of semiconductors with resistive and capacitive elements, e.g. comparators, summing or differential amplifiers. Semiconductor devices such as Complex Programmable Logic Devices (CPLD) or Field Programmable Gate Arrays (FPGA), or Programmable Logic Arrays (PLA), are based on interconnection of semiconductors such as transistors and diodes, which are often referred by persons practiced in the art as "gates" because of their switching property, into electronic devices. A technology such as a "fusible link" can be used to make a connection permanent. Switching can also be semi-permanent, happening when optical illumination or electromagnetic coupling occurs (e.g. a Hall Effect Transistor). The power of semiconductor advances in devices like the CPLD, FPGA, and PLA make possible

routing of connections and devices so that analog and digital devices are created "on-the-fly". In a similar manner the semiconductor material can be constructed into microcomputer circuits (e.g. shift registers, memory, comparators) the processes are a Turing Complete Boolean calculus of bitwise transforms and processes described by computer software algorithms."